

When programming is made at these timings, drain disturb can be restricted because the drain voltage application time is short.

It is also possible to apply +3.3 V to the
5 selected word line WLn at the timing t_0 and +1 V to the
diffusion layer Dn at the timing t_1 ($t_0 < t_1$) as shown in
Fig. 21C. Next, +3.3 V is applied to the third gate AGe at
the timing t_2 ($t_1 < t_2$). This voltage is kept for a
predetermined read time t ($t = t_3 - t_2$), and the voltage
10 of the third gate AGe is returned to 0 V at the timing t_3 .
The voltage of the diffusion layer Dn is returned to 0 V
at the timing t_4 ($t_3 < t_4$), and the voltage of the
selected word line WLn is returned to 0 V at the timing t_4
($t_3 < t_4$). Alternatively, it is possible to apply +1 V to
15 the diffusion layer Dn at the timing t_0 and +3.3 V to the
selected word line WLn at the timing t_1 ($t_0 < t_1$). Next,
+3.3 V is applied to the third gate AGe at the timing t_2
($t_1 < t_2$). This voltage is kept for a predetermined read
time t ($t = t_3 - t_2$) and the voltage of the third gate AGe
20 is returned to 0 V at the timing t_3 . The voltage of the
selected word line is returned to 0 V at the timing t_4 (t_3
< t_4), and the voltage of the diffusion layer is returned
to 0 V at the timing t_5 ($t_4 < t_5$).

As shown in Fig. 21F, +1 V is applied to the
25 diffusion layer Dn at the timing t_0 , and +3.3 V is applied
to the third gate AGe at the timing t_1 ($t_0 < t_1$). Next,
+3.3 V is applied to the selected word line WLn at the
timing t_2 ($t_1 < t_3$). This voltage is kept for a

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5 selected word line WLn at the timing t_0 and +1 V to the diffusion layer Dn at the timing t_1 ($t_0 < t_1$) as shown in Fig. 21C. Next, +3.3 V is applied to the third gate AGe at the timing t_2 ($t_1 < t_2$). This voltage is kept for a predetermined read time t ($t = t_3 - t_2$), and the voltage
10 of the third gate AGe is returned to 0 V at the timing t_3 . The voltage of the diffusion layer Dn is returned to 0 V at the timing t_4 ($t_3 < t_4$), and the voltage of the selected word line WLn is returned to 0 V at the timing t_4 ($t_3 < t_4$). Alternatively, it is possible to apply +1 V to
15 the diffusion layer Dn at the timing t_0 and +3.3 V to the selected word line WLn at the timing t_1 ($t_0 < t_1$). Next, +3.3 V is applied to the third gate AGe at the timing t_2 ($t_1 < t_2$). This voltage is kept for a predetermined read time t ($t = t_3 - t_2$) and the voltage of the third gate AGe
20 is returned to 0 V at the timing t_3 . The voltage of the selected word line is returned to 0 V at the timing t_4 ($t_3 < t_4$), and the voltage of the diffusion layer is returned to 0 V at the timing t_5 ($t_4 < t_5$).

As shown in Fig. 21F, +1 V is applied to the
25 diffusion layer Dn at the timing t_0 , and +3.3 V is applied to the third gate AGe at the timing t_1 ($t_0 < t_1$). Next, +3.3 V is applied to the selected word line WLn at the timing t_2 ($t_1 < t_3$). This voltage is kept for a